Coastal Protection and Restoration Authority of Louisiana

State of Louisiana
Department of Coastal Protection and Restoration
Operations Division

2012 Annual Inspection Report

for

DELTA WIDE CREVASSES (MR-09)

State Project Number MR-09
Priority Project List 6

October 3, 2012
Plaquemines Parish

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I. Introduction

Delta Wide Crevasses (MR-09) was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended. The Delta Wide Crevasses Project was approved on the sixth (6th) Priority Project List and project area is located within two wildlife management/refuge areas, both in Plaquemines Parish, La. The northern half of the project is located in the Delta National Wildlife Refuge. The southern half is located in the Pass-a-Loutre State Wildlife Management Area (PALWMA). The necessary agreements to allow project construction and operation to proceed have been executed between CPRA and the above-referenced parties.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Delta Wide Crevasses Project (MR-09) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of the project features and recommended corrective actions. Should it be determined that corrective actions are needed, CPRA shall provide a detailed cost estimate for the following: engineering, design, supervision, inspection, construction contingencies, and an assessment of the urgency of such repairs (O&M Plan August 1, 2007). The annual inspection report also contains a summary of maintenance projects and a three (3) year projected budget for operation, maintenance, and rehabilitation. The projected operation and maintenance budget is shown in Appendix C. A summary of past maintenance projects since completion of the Delta Wide Crevasses Project in 1999 is outlined in Section IV.

This annual inspection of the Delta Wide Crevasse Project (MR-09) was held on August 24th, 2012. Weather conditions were partly cloudy with winds S/SE at 7-10 knots. At 0800 hours the Mississippi River Stage at Venice was +1.71 feet NAVD 88. The reading at the head of Passes gage was +2.01 NAVD88. In attendance were Kyle Breaux, CPRA; Bryan Gossman, CPRA; Trebor Victorino, LDWF. The inspection team met with Louisiana Department of Wildlife and Fisheries (LDWF) personnel at the LDWF/ PALWMA Camp/Headquarters. LDWF vessels transported the team to each crevasse site. Soundings were taken through each cut.

The historical high river stages during the spring and summer months of 2011 contributed large amounts of sediment to each crevasse and receiving bay.

III. Project Description and History

The project area is located in Plaquemines Parish, southeast of Venice, Louisiana on the active Mississippi River Delta (Figure 1). This project utilizes the major process that forms subaerial land in the lower Mississippi River Delta – the formation of crevasses. Crevasses are breaks in a levee or natural ridge that allow overbank deposition of sediments to occur in adjacent interdistributary receiving bays. This deposition of sediments causes land formation that is controlled by the processes of distributary mouth-bar islands. Coleman and Gagliano (1964) ordered the mouth-bar island process into crevasse sub-delta and crevasse-splay based on relative size. Crevasse sub-deltas consist of relatively large receiving bays that have areal extents of 115-154 sq mi. (300-400 sq km) and depths of 32-49 ft (10-15 m). The process by which these sub-deltas are formed is referred to as “bay filling” (Coleman and Gagliano 1964). Crevasse-splays are a smaller sub-unit that are distinguished from sub-deltas in that their size, frequency, and expected life spans are smaller generally having a receiving bay extent of approximately 0.234 sq mi. (0.59 sq km) (Boyer 1996).

The project consists of maintaining presently existing crevasse-splays, the construction of new crevasse-splays, and future maintenance of selected crevasse-splays in both the PALWMA and the Delta National

Wildlife Refuge (DNWR). The PALWMA covers 66,000 ac (26,709 ha) between Pass-A-Loutre and South Pass and is owned and managed by the LDWF. The DNWR covers 48,000 ac (19,425 ha) from just north of Main Pass southward to Pass-A-Loutre and is owned and managed by the U.S. Fish and Wildlife Service (USFWS). It is understood that the natural cycle of crevasse-splays is a temporary event that is rarely active for more than 10 to 15 years. This process of crevasse-splay deposition, building, and subsidence will all be considered in the evaluation of this project.

The usefulness of crevasses as a tool of wetland and coastal management on the Mississippi River Delta began to be realized in the early 1980's. The Coastal Protection & Restoration Authority of Louisiana (CPRA) constructed three new crevasses in 1986 (on Pass-A-Loutre, South Pass, and Loomis Pass) that produced over 657 ac (266 ha) of emergent marsh from 1986 to 1991, and four crevasses in 1990 (two each on South Pass and Pass-A-Loutre) that produced over 400 ac (162 ha) of emergent marsh from 1990 to 1993 (LDNR 1993; Trepagnier 1994). Thirteen crevasses included in the CPRA Small Sediment Diversions Project cumulatively produced 313 ac (127 ha) of emergent marsh between 1986 and 1993; land growth rates ranged from 28 to 103 ac (11.3 to 41.7 ha) per crevasse for the older crevasses (4 to 10 years old) and 0.5 to 12 ac (0.2 to 4.9 ha) for the younger crevasses (0 to 2 years old) (LDNR 1996). Boyer et al. (1997) concluded that crevasses in the DNWR accumulated land at about 11.6 ac/yr (4.7 ha/yr), but subaerial growth did not occur for 2-3 years after the crevasses were constructed.

The project features covered by this inspection are inclusive of and are identified as the Delta Wide Crevasses (MR-09). The intention of the annual inspection is to maintain the project in a condition that will generally provide the anticipated benefits that the project was based on. There is no requirement that this project function to any standard beyond the 20-year economic life; except that it is not left as a hazard to navigation or a detriment to the environment. A site map showing the project boundary within the Delta Wide Crevasses project benefit area is shown in Appendix A identifying all of the project features within the project area.

IV. Summary of Past Maintenance Projects

General Maintenance: Below is a summary of completed maintenance project:

Originally dredged in 1999, crevasses No. 9, 11, and 12 in the PALWMA had completely silted in and did not function as originally intended. The first maintenance cycle took place in 2005. This maintenance dredging contract re-dredged those three crevasses to their original design dimensions and dredged two new crevasses in the same area. Those were NC-1 and NC-3. Also constructed in this maintenance contract was crevasse No. 81, which is located on Baptiste Collette in the Delta Wildlife Management Area. See Appendix A for locations of the maintenance sites.

V. Inspection Results of Crevasses Dredged in 2005 (See Appendix "B" for Project Photos)

A. Crevasse No. NC-1 (2005): (1,000 ft. X 100 ft. X -8.0 ft. NAVD 88) This crevasse appears to be in good condition. Soundings indicate that it has retained slightly more than half of its originally constructed depth. The interior indicates that river water is flowing very well through the channel carrying large amounts of sediment, and the receiving bay is heavily vegetated. SAV's densely populate the spoil islands**.**

B. Crevasse No. NC-3 (2005): (1,400 ft. X 100 ft. X -8.0 ft. NAVD 88) This is the second of the two new crevasses and the only one on South Pass. Our soundings show that the crevasse is maintaining its original depth throughout its channel length and the spoil from the crevasse

dredging has completely vegetated. The crevasse channel has extended into the receiving bay, creating a visible, subaerial channel bank.

C. Crevasse No. 9 (1999): (2,200 ft. X 75 ft. X -8.0 ft. NAVD 88) Dog-leg shaped crevasse. Soundings indicate that this crevasse is maintaining a 5'-6' depth. The spoil deposition from this cut is very heavily vegetated with cut grass and Roseau cane.

D. Crevasse No. 11 (1999): (2,600 ft. X 100 ft. X -8.0 ft. NAVD 88) This re-dredged crevasse (1999) is maintaining a good flow throughout its length. Soundings indicate that it has maintained 5'-7' depth throughout the channel. The low water levels in the river have allowed more vegetation growth on sediment deposits. Wild rice is now growing in the interior receiving bay.

E. Crevasse No. 12 (1999): (2,000 ft. X 75 ft. X -8.0 ft. NAVD 88) This crevasse has silted in on the right bank and is forming a channel ranging from 4'-8' deep. Mudflats spread across the receiving bay indicating development of new land

F. Crevasse No. 81 (2005): (1,200 ft. X 100 ft. X -8.0 ft. NAVD 88) This crevasse was not visited by the inspection team. It is located off Baptiste Collette in the Delta Wildlife Management Area. Conditions from the 2011 inspection are presumed to be the same: "Despite soundings indicating that the mouth of this crevasse has silted up from the large amounts of sediments moving into the cut, there is still some sediments being carried into the interior marsh area. The 3.5' draft of the boat was too deep to travel into the crevasse."

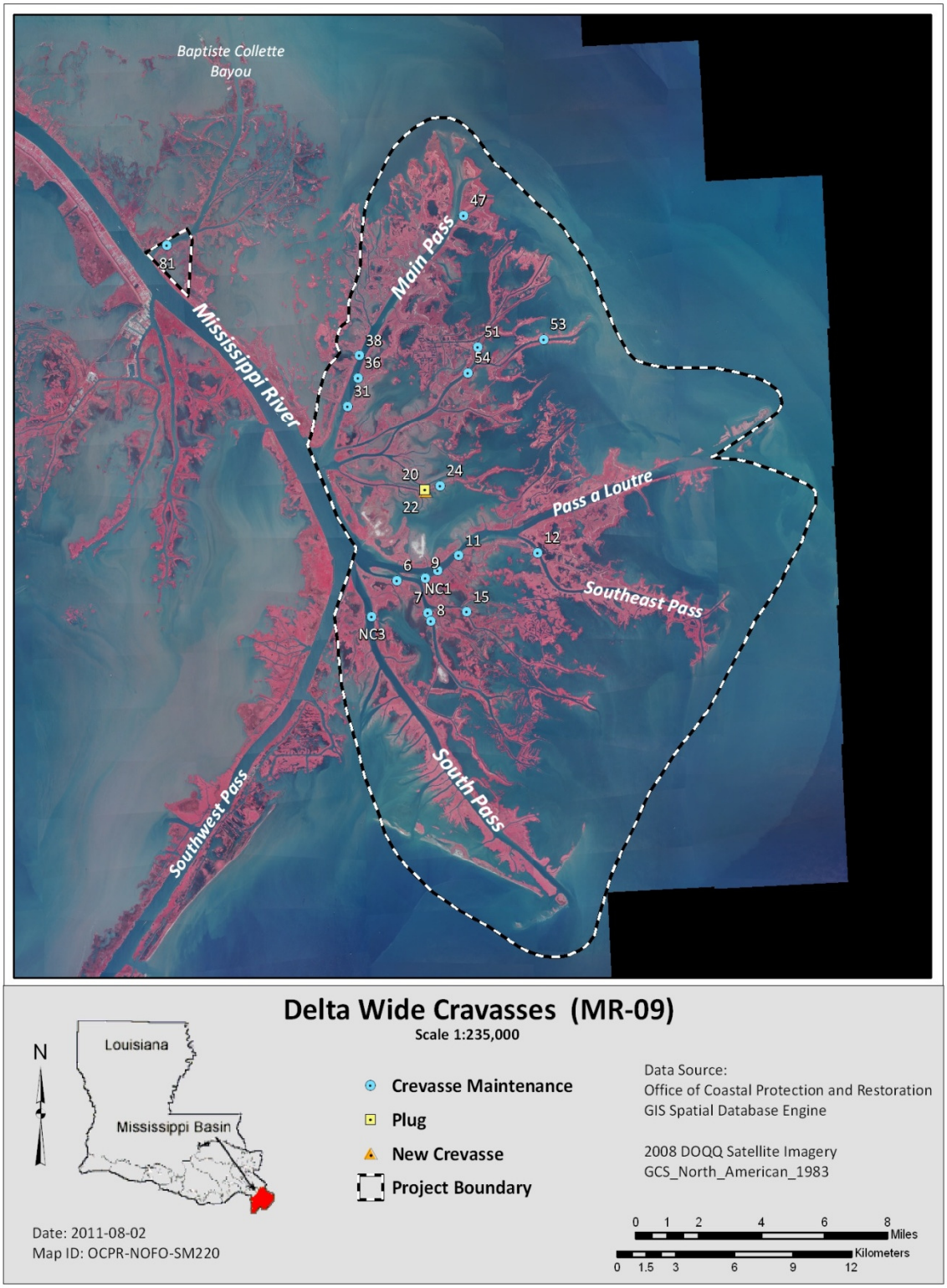
VI. Conclusions and Recommendations

As a result of the inspection, the team concluded that all project features are functioning and should continue to do so without any immediate maintenance. The additional material from USACE dredging in 2011 has produced visible land building benefits in the receiving bays. Mud flats, thicker vegetation, and extension of crevasse channels can be attributed to the 2011 high river. The summer of 2012 has seen very low river levels (lowest in 40 years). With water levels more than a foot lower than the 2011 inspection, the team could identify locations of sediment deposition within the receiving bays.

Design surveys are currently underway for the third maintenance event for MR-09. CPRA, NOAA, LDWF, and USFWS met in May of 2012 to discuss locations of new crevasses as well as clean-outs. Pending permit application and survey completion, all agencies are hoping to begin construction by mid-summer of 2013. It is also recommended that we not return to Baptiste Collette to either maintain or dredge new crevasses – alternate sites can be found in the Pass-A-Loutre area. The strong current and high sediment load funneled through Baptiste Collette shoaled these crevasses within the first high water period after dredging rendering them inefficient for the long term (5-years plus).

New or existing sites will be dredged or cleaned out in the PALWMA and the DNWR. The new or existing dredge sites are located on Main Pass, Octave Pass, Pass-A-Loutre, South Pass, and Johnson Pass.

APPENDIX A
Project Features Map


Baptiste Collette Bayou
Main Pass
Mississippi River
Pass a Loutre
Southeast Pass
South Pass
Southwest Pass
81
47
53
51
54
38
36
31
20
24
22
11
12
6
9
NC1
7
8
15
NC3
Delta Wide Cravasses (MR-09)
Scale 1:235,000
N
Louisiana
Mississippi Basin
Crevasse Maintenance
Plug
New Crevasse
Project Boundary
Data Source:
Office of Coastal Protection and Restoration
GIS Spatial Database Engine
2008 DOQQ Satellite Imagery
GCS_North_American_1983
0 1 2 4 6 8 Miles
0 1.5 3 6 9 12 Kilometers
Date: 2011-08-02
Map ID: OCPR-NOFO-SM220

APPENDIX B
Photographs

Crevasse No. 12 (View 1) Looking into crevasse from South East Pass.

Crevasse No. 12 (View 2) Looking west. Spoil area in center of view.

Crevasse No. 11. (View 1) Looking back to Pass a Loutre. Crevasse has maintained its constructed width throughout.

Crevasse No. 11. (View 2) Vegetated crevasse dredging spoil in bay area, foreground.

Crevasse No. NC-1. (View 1) Looking into Receiving Bay.

Crevasse No. NC-1. (View 2) Vegetated spoil deposition in inside bay area.

Crevasse No. 9. (View 1) From Pass-A-Loutre looking south into the crevasse.

Crevasse No. 9. (View 2) Crevasse end looking at spoil area vegetation sediment deposits from the recent high river.

Crevasse No. NC-3. (View 1) Looking into crevasse from South Pass showing heavy vegetation on both banks.

Crevasse No. NC-3. (View 2) Crevasse terminus looking east into open pond area. Notice shallow depth of water in center.

Crevasse No. 81. (2011 Stock Photo). This crevasse location was not visited by the crew.

Appendix C
Three Year Operations & Maintenance Budget

PPL 6

Approved O&M June 2009	Year 0 FY00	Year - 1 FY01	Year -2 FY02	Year -3 FY03	Year -4 FY04	Year -5 FY05	Year -6 FY06	Year -7 FY07	Year -8 FY08	Year -9 FY09	Year -10 FY10	Year -11 FY11	***Year -12*** ***FY12***	***Year -13*** ***FY13***	***Year -14*** ***FY14***	Year -15 FY15	Year -16 FY16	Year - 17 FY17	Year -18 FY18	Year -19 FY19	OCPR Project Estimate Project Life Budget	CWPPRA Allocated Money Currently Funded (Sum YR 0 to YR 19)
State O&M	$0	$5,530	$0	$5,821	$1,038,284	$6,128	$0	$6,451	$0	$1,217,164	$0	$7,148	$0	$7,525	$1,376,120	$7,921	$0	$8,338	$0	$8,777	$3,695,207	$3,695,207
Corps Admin																					$0	$0
Federal S&A																					$0	$0
Total																					$3,695,207	$3,695,207
Projected O&M Expenditures																					Remaining Project Life	***Current 3 year Request (FY12, 13,***
Maintenance Inspection													$7,525	$7,721	$7,921	$8,127	$8,339	$8,555	$8,778	$9,006	$65,973	$23,167
General Maintenance														$0							$0	$0
Structure Operation														$0							$0	$0
Federal S&A														$10,258							$10,258	$10,258
State S&A														$15,387							$15,387	$15,387
E&D														$76,935							$76,935	$76,935
Surveys														$126,000							$126,000	$126,000
Construction														$1,700,000							$1,700,000	$1,700,000
Construction Oversight														$120,000							$120,000	$120,000
Total					$840,551	$0	$0	$0	$0	$0	$0	$0	$7,525	$2,056,301	$7,921	$8,127	$8,339	$8,555	$8,778	$9,006	$2,713,418	$2,071,747

Total O&M Expenditures from COE Report (Ince	$1,014,506.26	Lana 2012	**Current O&M Budget less COE Admin**	$3,695,207	Current Project Life Budget less COE Admin	$3,695,207
State O&M Expenditures not submitted for in-k	$0		*(State O&M Currently Funded + Fed S&A Currently Funded)*		*(State O&M Prorject Life Budget + Fed S&A Project Life Budge*	
Federal Sponsor MIPRs (if applicable) (REQUEST	$0		**Remaining Available O&M Budget**	$2,680,701	Total Projected Project Life Budget	$3,727,924
Total Estimated O&M Expenditures (as of May 2	**$1,014,506.26**		*(Current O&M - Total Est. O&M Expenditures)*		*(Remaining Project Life + Total Estimated O&M Expenditures)*	
			Incremental Funding Request Amount FY12-FY14	**$ (608,953.70)** Unexpended	**Project Life Budget Request Amount**	**$32,717**

Appendix D
Field Inspection Form

FIELD INSPECTION CHECK SHEET

Project No. / Name:	Delta Wide Crevasses MR-09	Date of Inspection:	August 24, 2012 Time: 9:30 AM
Crevasse No.	**See Report Section III**	Inspector(s):	CPRA: Kyle Breaux, Bryan Gossman; LDWF: Trebor Victorino
Crev. / Terr. Specs.	See Report Section III	Water Level:	1.71 feet NAVD 88 at Venice, La. Time: 8:00 AM
Type of Inspection:	2012 Annual Inspection	Weather Conditions:	Cloudy, Breezy, Wind SSE @ 7-10 knots

Item	Condition	Physical Damage	Dimensions	Photo	Observations and Remarks
Crevasse # NC-1	Good	None	1,000 ft X 100 ft by -8.0' NAVD 88	Appendix B	This new crevasse (2005) appears to be in good condition. Soundings read 4' at the inlet and 4' at the terminus. The spoil from the dredging of the crevasse is heavily vegetated throughout the deposited bay area (roseau cane patches)
Crevasse # NC-3	Excellent	None	1,400 ft X 100 ft by -8.0' NAVD 88	Appendix B	This new crevasse (2005) off of South Pass is functioning very well, seems to be flowing swiftly. This crevasse maintains a -10'+ at inlet and 8.5' at the terminus. The interior bay is heavily silted and full of roseau cane.
Crevasse # 9	Very Good	None	2,200 ft X 75 ft by -8.0' NAVD 88	Appendix B	Good flow is being maintained by this dog-leg shaped crevasse. 6' at inlet, sloping to 8'. The water depth hovered between 5'-6' throughout the channel. Vegetation includes cut grass and roseau cane
Crevasse # 11	Very Good	None	2,600 ft X 100 ft by -8.0' NAVD 88	Appendix B	<4 ft at the inlet, which drops to 8 ft and rises to 5-6 ft about 100 yards in.. The crevasses was 3' at the terminus. The channel is forming on the left side with SAV present on the right side. Wild rice gtrowing throughout receiving bay.
Crevasse # 12	Very Good	None	2,000 ft X 75 ft by -8.0' NAVD 88	Appendix B	Currents are moderate to swift through this crevasse, despite it being located off of the main channel. Soundings read 8' at the inlet, 5'-6' halfway through, and <4' at the terminus. Right side of the crevasse is beginning to silt in..
Crevasse # 81	Poor	None	1,200 ft X 100 ft by -8.0' NAVD 88	Appendix B	This crevasse is located on the south bank of Baptiste Collette just off of the Miss. River. Due to its location, it is receiving strong current and heavy sediment loads. The dredge spoil has vegetated very nicely; however, it's location causes it to shoal at the inlet (3'-4' depth) during the first high river and renders it inefficient for the long term.